UNIVERSIDAD CARLOS III DE MADRID working papers

Working Paper 12-20
Economic Series
July, 2012

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Micro vs. Macro Consumption Data: The Cyclical Properties of the Consumer Expenditure Survey*

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This version: July 4, 2012

Abstract

The Consumer Expenditure Survey (CEX) offers the most comprehensive consumption data at the consumer level for the United States. Several previous studies have shown a large gap between per-capita consumption from the CEX and the aggregate Personal Consumption Expenditure (PCE) series. While previous research has focused on consumption levels, we focus on the cyclical properties of consumption. We find that the cyclical properties of consumption expenditure data from the two sources are quantitatively very different. This result calls for caution when using CEX data for business cycle research.

JEL classification: E01, E21, E32
Keywords: consumption, business cycles, Consumer Expenditure Survey, Personal consumption Expenditure

∗ This paper has benefited from comments by Thijs van Rens and by the audiences at Universidad de Vigo and at the Econometric Society European Meetings in Oslo, 2011. Paloma Corrales Asensio provided research assistance. Campos and Reggio gratefully acknowledge the financial support by the Spanish Ministerio de Ciencia y Tecnología (Grants ECO2009-13169 and ECO2009-11165).

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1 Introduction

While representative agent models can be usefully calibrated or estimated with aggregate data, the need for more detailed micro datasets becomes apparent as the discipline increasingly resorts to heterogeneous agent models.[1] Consumption is, of course, a key variable, as it is one of the two variables from which agents who populate macroeconomic models regularly derive utility –the other being leisure. The Consumer Expenditure Survey (CEX) is the only source for micro-data on consumption with a breadth of coverage comparable to Personal Consumption Expenditure (PCE), the aggregate series on consumption commonly used in business cycle research. Competing surveys, such as the Consumer Population Survey (CPS) and the Panel Study of Income Dynamics (PSID) do not reach the breadth and level of detail in consumption included in the CEX.[2]

Macroeconomists have long been users of CEX micro level data. Several strands of literature are notable clients of the CEX data. First, the CEX data are an indispensable source for studying consumption dynamics over the life cycle. The work by Attanasio, Banks, Meghir, and Weber (1999) is an early example of this ongoing literature. Second, a continuing body of work including Souleles (1999) and Parker (1999) tests the Euler equation using the CEX data. Third, a more recent body of literature uses the CEX data to study the cross-sectional dispersions of consumption expenditure, how these dispersions evolved over time, and how their evolution compares with that of income inequalities. Examples in this literature include the work by Krueger and Perri (2006), as well as by Blundell, Pistaferri, and Preston (2008), Primiceri and van Rens (2009), and Heathcote, Perri, and Violante (2010). Fourth, in business cycle research, CEX data was used by Bils and Klenow (1998) and, more recently, by Eusepi and Preston (2009) and López (2010).

Previous research has detected a gap in levels between CEX micro data and PCE (see, for example, Slesnick 1992, Garner, Janini, Passero, Paszkiewicz, and Vendemia 2006, and recent work by Heathcote, Perri, and Violante 2010). The finding is that per-capita consumption expenditure measured

[1] On the trend towards heterogeneous agent models consider the statement by Heathcote, Perri, and Violante (2010), who write "the expansion of business-cycle analysis to richer models with heterogeneous agents is at the forefront of the research program in quantitative macroeconomics," and also the survey on heterogeneous agent models by Heathcote, Storesletten, and Violante (2009). On the use of micro data in macroeconomic research, consider the forceful case made by Browning, Hansen, and Heckman (1999) in their entry in the *Handbook of Macroeconomics*.

[2] For a description and discussion of the relative merits of the CEX, CPS and PSID see Attanasio (1999).

in the CEX is roughly half as large as PCE data and that the gap increases over time. This gap in levels does, however, not tell us anything about how deviations from trend in consumption measured from the CEX and the PCE compare.[3] We tackle this question in this paper. Using consumption data from the CEX interview survey we conduct the type of analysis which is familiar to macroeconomists from the influential work by Cooley and Prescott (1995) and which consists in looking at the moments of log deviations from trend of the variables of interest.

Studying the cyclical properties of consumption from the CEX is of particular importance if CEX data are to be used for business cycle research. If the cyclical properties of micro and macro consumption data do not line up, results from a dynamic general equilibrium model using micro-data from CEX and the long body of prior research using aggregate PCE data are not easily comparable.

2 Data and Methodology

2.1 The CEX and PCE

PCE measures the goods and services purchased by households and by nonprofit institutions serving households (NPISHs) who reside in the United States. PCE also includes purchases by US government civilian and military personnel stationed abroad, regardless of the duration of their assignments, and by US residents who are traveling or working abroad for 1 year or less. Travel expenditures by non-residents are subtracted to compute a net value.

The CEX, on the other hand, is a survey which measures the goods and services purchased by households resident in the United States, and does not include expenses of NPISHs. The survey targets the civilian non-institutionalized population, and therefore excludes government civilian and military personnel stationed abroad. Although it measures travel expenditures by residents, it evidently does not measure travel expenditures by non-residents.

[3] In fact, examples can be constructed in which there is a gap between PCE and the CEX but deviations from trend are identical. Consider, for example, two fictitious consumption time series $c_t^a = \exp(\gamma^a t)$ and $c_t^b = \exp(\gamma^b t)$ where $\gamma^a \neq \gamma^b$. There is a gap between the two series (which is increasing over time). However, the log of each series is a straight line. A trend extracted from a straight line (using either a linear trend specification or the HP filter) will just identify the trend with the straight line. Log-deviations from this trend are then exactly equal to zero for both time series and all relevant business cycle statistics coincide.

The CEX actually consists of two separate surveys: the Interview survey and the Diary survey. The survey we use, the Interview survey, is a rotating panel which interviews households with quarterly frequency. Household members are asked to recall expenditure on consumption items made over the previous three months. In addition to data on consumption expenditure, this survey offers complete information on socio-economic characteristics of households. In the smaller Diary survey, on the other hand, respondents are asked to fill a diary for two consecutive weeks. Data on some items, particularly food, are more detailed than in the Interview survey. A major drawback of the Diary survey is that it provides comprehensive consumption data only starting in 1986.

Due to differences in scope we are forced to exclude from our analysis the two functional categories present in PCE which cannot be measured with CEX data: *Final consumption expenditures of NPISH* and *Net Foreign Travel*. There is no need to exclude any other category beyond these two for our study. The CEX covers the definitions of the remaining PCE categories remarkably well. It does, for example, include a measure of imputed housing services, an important subitem in *Housing and utilities*, which is included in PCE and the CEX despite not being an expenditure. Our aggregate consumption measures are then defined as follows. Using line numbers from NIPA Table 2.4.5U, we define durable goods as line 3 (*"Durable goods"*) and nondurable goods as line 70 (*"Nondurable goods"*). Services are defined as line 149 (*"Household consumption expenditures (for services)"*) minus line 327 (*"Net foreign travel"*).[4]

Neither the CEX's own consumption classification nor the classification of non-durable consumption in Attanasio and Weber (1995) –which is a classification usually followed in the literature– are comparable to the definition of PCE in aggregate NIPA data. This problem spawned the pioneering work by Harris and Sabelhaus (2000), who created the CEX-NBER extracts for the period 1980:Q1–2003:Q2 by using the detailed expenditure files of the CEX and mapping each Universal Classification Code (UCC) into a functional category of consumption of a previous classification of the PCE. We conduct our study for the whole period for which CEX data are available, 1980:Q1–2009:Q4. Since the functional classification for PCE has changed over time (it experienced a substantive change in

[4]Line 149, *"Household consumption expenditures (for services)"* already excludes *"Final consumption expenditures of NPISH"*, measured in line 336. Lines 149 and 336 add up to line 148 in NIPA Table 2.4.5U (*"Services"*).

the 2009 comprehensive revision by the BEA), we cannot use the mapping by Harris and Sabelhaus (2000), or any other previous mapping. We redo the classification and map each UCC into its closest analogue in the functional classification of PCE data to obtain durable, nondurable, and services consumption expenditure for each consumer unit in the sample. Our mapping from UCCs into PCE categories is provided in the Appendix.

2.2 Sample selection and data treatment

We follow the literature in dropping some households from the sample for data quality purposes. It is common to restrict the sample to consumer units satisfying certain consistency criteria. We focus on consumer units classified as complete income reporters with nonzero nondurable consumption. Further, if a wage is reported, we require that the hourly wage is at least half of the minimum wage and that the consumer unit does not report positive labor income while working zero hours. As virtually all studies using the CEX over the whole period we consider only urban consumer units. The reason is that between 1981 and 1984 non-urban households were excluded from some of the interviews because of budget cuts.[5]

Before conducting the analysis, we transform the data into the form used in business cycle research. As is common practice in this line of research, data are rendered per-capita by dividing by a measure of working-age population: civilian non-institutionalized population between the ages 16 and 64.[6] We deflate data with indexes from NIPA Table 1.1.9: *Implicit Price Deflators for Gross Domestic Product* to obtain chained-dollars of 2005 and seasonally adjust using the Census Bureau's ARIMA X-11 procedure. The vintage of all NIPA data for the period 1980:Q1–2009:Q4 which are used in this paper is 2010:Q4 (Advanced estimates).

[5]On the absence of rural households in the CEX in selected years see Citro and Michael (1995, p. 392) and the documentation file for the 1982-1983 data tapes. Rural data was discontinued in the third quarter of 1981 and then resumed in the first quarter of 1984. Leaving rural households in the sample could produce jumps which would be (incorrectly) interpreted as cyclical movements in consumption.

[6]We obtain these data from the BLS website (we compute quarterly averages of the difference between series LNU00000000 and series LNU00000097).

3 Results

Table 1: *Summary statistics for the period 1980:Q1–2009:Q4. Variables are in levels after seasonally adjusting. The first two rows are measured in thousands of constant 2005 dollars. The word relative indicates that a value is measured relative to GDP. Abbreviations are D: durables, ND: nondurables, S: services.*

	GDP	CEX D	CEX ND	CEX S	PCE D	PCE ND	PCE S
Mean	52.94	1.79	4.61	9.61	3.59	8.73	24.14
Standard Dev	8.69	0.48	0.18	0.60	1.46	1.12	3.99
Relative Standard Dev	1.00	0.05	0.02	0.07	0.17	0.13	0.46
CV	0.16	0.27	0.04	0.06	0.41	0.13	0.17
Relative CV	1.00	1.62	0.23	0.38	2.47	0.78	1.01

Table 1 exhibits summary statistics for per-capita consumption expenditure from CEX and PCE data, as well as per-capita GDP. Consumption expenditure as measured from the CEX hovers around 50% of consumption expenditure in PCE for durables and nondurables, and around 40% for services. In the case of services, the shortfall of CEX data is the largest. This finding is, of course, not new. It is in line with the findings of previous research which was discussed in the Introduction. The gap between CEX and PCE data widens as time progresses for all three consumption categories. This can be best seen in Figures 1a through 1c.

The gap in levels is not by itself informative of the cyclical properties of data from the CEX and PCE. As discussed in the Introduction, the difference in levels, and the increasing gap, will show up in the trend which is fitted to the data, not in the deviations from trend. However, Figures 1a through 1c already hint at the fact that deviations from trend are more volatile in the CEX than in data from PCE. The question about volatility is quantitatively taken up in Table 2, which exhibits variability measures for the cyclical component of the macroeconomic aggregates. The cyclical components for durable, nondurable and services consumption in CEX and PCE data are plotted in Figures 1d through 1f. As is usual in business cycle research, we measure the cyclical component as the log-deviation from a trend by running the data through a Hodrick-Prescott filter with a parameter value of 1600.

As documented by Table 2, the standard deviation of the cyclical component of consumption expenditure is uniformly larger for CEX data. In fact, the cycle of nondurables and services is at least

twice as volatile as in PCE data.

The last row of Table 2 computes a statistic frequently used in business cycle research: the standard deviation of the cyclical component of consumption aggregates relative to the standard deviation of the per-capita GDP cycle. It is remarkable that the volatility of the cycle of nondurable and services consumption is larger than GDP volatility. If we were to take the standpoint that consumption expenditure in the CEX is adequately measured, then we would conclude that agents are not succeeding in smoothing consumption.

Table 2: *Summary statistics for the period 1980Q1–2009Q4: deviations from a Hodrick-Prescott trend line with smoothing factor 1600. The word 'relative' indicates that a value is measured relative to GDP. Abbreviations are D: durables, ND: nondurables, S: services.*

	GDP	CEX D	CEX ND	CEX S	PCE D	PCE ND	PCE S
Std Dev Cycle	0.01	0.07	0.02	0.02	0.04	0.01	0.01
Relative Std Dev Cycle	1.00	5.27	1.78	1.83	2.64	0.74	0.55

To study the contemporaneous co-movement of variables we compute correlations between consumption in CEX and PCE data. The upper half of Table 3 shows that, while the correlation in log-levels between the three consumption aggregates is high in PCE data, this is less true for the CEX. Also, in the case of CEX, the correlation of nondurable consumption with the other two aggregates is extremely low when compared to the PCE benchmark.

The lower half of Table 3 exhibits contemporaneous correlations for the cyclical components of the series. It shows that the consumption cycle in the CEX is badly correlated with the cycle measured with data from PCE. Again, we find that the correlation between the different CEX consumption categories is also lower than correlation between PCE consumption categories for all variables involved. This result, which is also apparent from viewing the plots in Figures 1d through 1f, means that aggregated micro-data from the CEX tell a completely different story about the business cycle than aggregate PCE data.

In Table 4 we compute the correlations between GDP deviations from trend and lagged and forward deviations from trend of expenditure categories. Across the board, correlations are lower when CEX data rather than PCE data are employed. For example, the contemporaneous correlation of the

Table 3: *Correlation matrix for log levels and cycle for the period 1980Q1–2009Q4. Data is seasonally adjusted before taking logs. The cycle is measured as log deviations from a Hodrick-Prescott trend with smoothing factor 1600. Abbreviations are D: durables, ND: nondurables, S: services.*

	CEX D	CEX ND	CEX S	PCE D	PCE ND	PCE S
Log levels						
CEX D	1.00					
CEX ND	0.31	1.00				
CEX S	0.82	0.43	1.00			
PCE D	0.96	0.33	0.85	1.00		
PCE ND	0.94	0.35	0.86	1.00	1.00	
PCE S	0.91	0.27	0.86	0.97	0.98	1.00
	CEX D	CEX ND	CEX S	PCE D	PCE ND	PCE S
Cycle						
CEX D	1.00					
CEX ND	0.30	1.00				
CEX S	0.27	0.55	1.00			
PCE D	0.52	0.48	0.32	1.00		
PCE ND	0.40	0.51	0.31	0.75	1.00	
PCE S	0.30	0.58	0.31	0.67	0.71	1.00

consumption cycle (measured as nondurables and services) with the GDP cycle is 0.55 in CEX data compared to 0.85 in aggregate data.

In addition to low cross-correlations, CEX cyclical measures also exhibit low autocorrelations. We display autocorrelations in Table 5 and again find that the CEX exhibits the lower values. Autocorrelations of the cyclical components in the CEX drop to zero quickly (they are zero after 4 quarter lags). In the case of PCE, autocorrelations do not drop as fast as the order of the lag is increased.

Table 4: *Cross correlations between variables and GDP. The variables are measured as quarterly lagged deviations from a Hodrick-Prescott trend with smoothing factor 1600. Quarterly data for the period 1980Q1–2009Q4. Abbreviations are D: durables, ND: nondurables, S: services, C: nondurables and services.*

	t-5	t-4	t-3	t-2	t-1	t	t+1	t+2	t+3	t+4	t+5
CEX D	0.31	0.37	0.41	0.42	0.38	0.36	0.16	-0.00	-0.13	-0.18	-0.25
CEX ND	-0.02	0.16	0.33	0.47	0.61	0.69	0.59	0.41	0.27	0.06	-0.10
CEX S	-0.02	0.10	0.16	0.25	0.34	0.39	0.40	0.36	0.27	0.10	-0.05
CEX C	-0.02	0.13	0.25	0.36	0.48	0.55	0.51	0.42	0.30	0.10	-0.08
PCE D	0.19	0.42	0.58	0.69	0.79	0.77	0.55	0.39	0.19	0.05	-0.10
PCE ND	0.16	0.36	0.53	0.65	0.73	0.83	0.72	0.56	0.39	0.22	0.03
PCE S	0.09	0.34	0.53	0.65	0.75	0.77	0.66	0.54	0.42	0.25	0.11
PCE C	0.12	0.37	0.56	0.70	0.80	0.85	0.73	0.60	0.44	0.26	0.09

Table 5: *Autocorrelations. The variables are measured as quarterly deviations from a Hodrick-Prescott trend with smoothing factor 1600. Quarterly data for the period 1980Q1–2009Q4. Abbreviations are D: durables, ND: nondurables, S: services, C: nondurables and services.*

	CEX D	CEX ND	CEX S	CEX C	PCE D	PCE ND	PCE S	PCE C
t-1	0.25	0.69	0.61	0.69	0.68	0.80	0.85	0.86
t-2	0.12	0.46	0.36	0.46	0.56	0.66	0.68	0.72
t-3	0.14	0.26	0.13	0.24	0.41	0.52	0.49	0.57
t-4	-0.05	0.02	-0.04	0.02	0.23	0.33	0.23	0.33
t-5	-0.12	-0.05	-0.01	-0.04	0.05	0.12	0.02	0.11

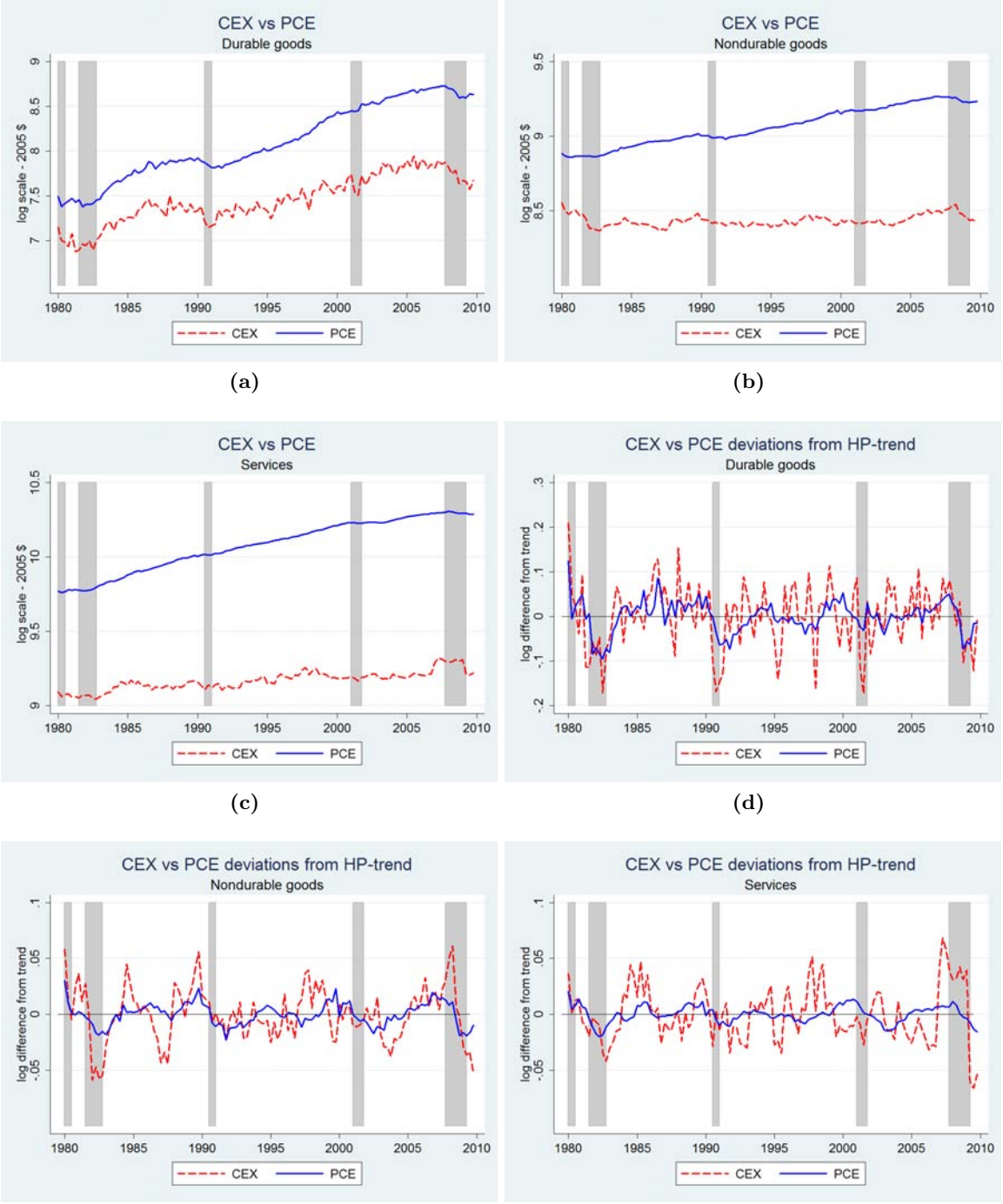

Figure 1: *Figures (a)–(c) plot the logarithm of quarterly seasonally adjusted per-capita durable, nondurable, and services consumption expenditure in the CEX survey and in PCE. Figures (d)–(f) plot the cyclical component of per-capita durable, nondurable, and services consumption expenditure in the CEX survey and in PCE. Data in these last figures are the logarithm of the seasonally adjusted series and has been filtered with the Hodrick-Prescott filter with parameter 1600. Shaded areas represent NBER dated recessions.*

Summarizing, our main findings are that (1) CEX data exhibit a low correlation with PCE data, particularly in the case of nondurable and services consumption, (2) the consumption cycle is more volatile in the CEX than PCE, –in fact, CEX nondurables and services are more volatile than the GDP cycle–, (3) CEX data are less autocorrelated, and (4) the cyclical components in CEX data are less correlated with the GDP cycle at various different lags.

4 Discussion and Conclusion

Micro evidence has been used in informing and evaluating dynamic general equilibrium models at least since the 1980s (cf. Prescott, 1986). The CEX, given its exhaustive information on consumption, provides, in principle, an ideal dataset to bridge the micro and macro literatures. However, we have found in this paper that micro and macro measures of consumption do not exhibit the same cyclical properties. This discrepancy between the cyclical properties of CEX and PCE is particularly worrying if CEX data are to be used in research where the cyclical properties of data play a role. By highlighting the discrepancy between the cyclical properties of the CEX and PCE, our paper warns against the indiscriminate use of the CEX for this purpose.

There is a case to be made that some of the findings, in particular the greater variance in the CEX, are to be expected to some extent. As all surveys the CEX will contain survey (sampling) variability. It is, however, not obvious that this increased cross-sectional variability necessarily translates into greater variability over time of deviations from a trend. The reason of the discrepancy between micro and macro data may also lie on the side of aggregate data. In the calculation of PCE interpolation and forecasting methods are used. Personal consumption expenditure on certain items is estimated using the residual method (by subtracting government purchases from total expenditure).

In our paper we do not extend judgment on which data source, the CEX or PCE, is the "correct" measure of consumption expenditures, although some of the findings, such as the excessive volatility of consumption –which implies a failure of consumption smoothing by the average CEX consumer unit–, will probably make some macroeconomists suspicious of the CEX. If, in fact, the cyclical

properties of PCE data are preferred over those of CEX, then this leads to the next question: is there a way of adjusting CEX data so that it is compatible with the cyclical properties of PCE?

At the time of writing, there does not exist a generally accepted way of adjusting or improving CEX data. We have identified two possible strategies in the literature which, although not specifically designed to align the cyclical properties of both data sources, have been proposed to correct for measurement error in the CEX. The first approach is to use complementary data sources to minimize measurement error in the CEX. Recent work in this direction includes Attanasio, Battistin, and Ichimura (2004) and Battistin and Padula (2010), who attempt to resolve measurement error by using two different collection methods available in the CEX: the interview data, which is used in our study, and a diary of consumption available for some consumption items. The second approach relies on consumer theory and, in particular, budget constraints. Examples of this strategy include Parker, Vissing-Jorgensen, and Ziebarth (2009) and Aguiar and Bils (2011), who use a demand system to correct for systematic measurement error in the CEX's expenditure data. Both approaches have proven useful in closing the gap between the CEX data and aggregate consumption data. Whether they help in aligning micro and macro data on the cyclical dimension in a satisfactory way is still an open question that we leave for future research.

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Appendix A: UCC mapping

In this Appendix we explain how consumption expenditures from the detailed expenditure files in the CEX can be aggregated to make them compatible with PCE (2009 revision).

The construction of an updated mapping between UCCs and PCE categories is a byproduct of this paper. Since we expect our mapping to be useful for others, we present it at the highest possible level of detail, so that future researchers do not need to "reinvent the wheel". Rather than exhibiting a table that maps UCCs into the three major categories (durables, nondurables and services), we map them into subitems of these categories. Subcategories can then be collapsed into the major categories if desired by taking into account that major categories are composed of the following subcategories (numbers in parentheses indicate line numbers in NIPA Table 2.4.5U):

Durable goods include *Motor vehicles and parts* (4), *Furnishings and durable household equipment* (21), *Recreational goods and vehicles* (36), *Other durable goods* (60).

Nondurable goods include *Food and beverages purchased for off-premises consumption* (71), *Clothing and footwear* (102), *Gasoline and other energy goods* (111), and *Other nondurable goods* (118).

Services include *Housing and Utilities* (150), *Health care* (168), *Transportation services* (186), *Recreation services* (205), *Food services and accommodations* (228), *Financial services and insurance* (246), *Communication* (275), *Education Services* (284), *Professional and other services* (292), *Personal care and clothing services* (301), *Social services and religious activities* (309), and *Household Maintenance* (321).

Table 6: *Classification of UCC codes into line numbers of NIPA Table 2.4.5U.*

Line No.	Universal Classification Code (UCC)
4	450110 450210 480110 480211 480213 480214 480215 490500 490501 490502 600141 600142
21	230117 230118 230131 230132 230133 230134 240111 240112 240113 240121 240122 240123 240211 240212 240213 240214 240221 240222 240223 240311 240312 240313 240321 240322 240323 290110 290120 290210 290310 290320 290410 290420 290430 290440 300111 300112 300211 300212 300221 300222 300311 300312 300321 300322 300331 300332 300411 300412 320110 320111 320120 320130 320150 320161 320162 320163 320210 320220 320230 320231 320233 320310 320320 320330 320340 320350 320360 320370 320410 320420 320511 320512 320521 320522 320611 320612 320613 320621 320622 320623 320631 320632 320633 320901 320902 320904 610120 690241 690242 690243 690244 690245 790690 990920 990930 990940
36	310110 310120 310130 310140 310210 310220 310230 310240 310311 310312 310313 310314 310320 310330 310333 310334 310340 310341 310342 310350 450220 590220 590230 600110 600121 600122 600132 600210 600310 600410 600420 600430 600900 600901 600902 610130 610230 690110 690111 690112 690115 690117 690220 690230
60	320232 430110 430120 430130 660110 660210 660310 660410 660900 660901 660902 690210 550110 550320 550330 550340
71	190904 790220 790230 790240 790310 790320 790330
102	360110 360120 360210 360311 360312 360320 360330 360340 360350 360410 360511 360512 360513 360901 360902 370110 370120 370130 370211 370212 370213 370220 370311 370312 370313 370314 370901 370902 370903 370904 380110 380210 380311 380312 380313 380320 380331 380332 380333 380340 380410 380420 380430 380510 380901 380902 380903 390110 390120 390210 390221 390222 390223 390230 390310 390321 390322 390901 390902 400110 400210 400220 400310 410110 410111 410112 410120 410121 410122 410130 410131 410132 410140 410141 410142 410901 410902 410903 410904
111	250111 250112 250113 250114 250211 250212 250213 250214 250221 250222 250223 250224 250901 250902 250903 250904 250911 250912 250913 250914 470111 470112 470113 470211 470212 470220
118	280110 280120 280130 280210 280220 280230 280900 320903 330511 420110 420120 590110 590111 590112 590210 590211 590212 590310 590410 610110 610140 610210 610320 630110 630210 640130 640420 540000

Table 6: *Classification of UCC codes into line numbers of NIPA Table 2.4.5U (continued).*

Line No.	Universal Classification Code (UCC)
150	210110 260111 260112 260113 260114 260211 260212 260213 260214 270211 270212 270213 270214 270411 270412 270413 270414 270901 270902 270903 270904 800710 910050 910060 910070 910100 910101 910102 910103
168	340910 560110 560210 560310 560320 560330 560400 560900 570110 570111 570210 570220 570230 570240 570901 570903
186	220901 220902 450310 450313 450314 450410 450413 450414 480212 490110 490211 490212 490220 490221 490231 490232 490311 490312 490313 490314 490315 490317 490318 490319 490411 490412 490413 490900 520410 520511 520512 520521 520522 520530 520531 520532 520541 520542 520550 520560 520901 520902 520903 520904 520905 520906 520907 530110 530210 530311 530312 530411 530412 530510 530901 530902 620113 620902 620906 620907 620909 620919 620921 620922
205	270310 270311 340610 340902 340905 610900 620110 620111 620112 620115 620121 620122 620211 620212 620221 620222 620310 620320 620330 620410 620420 620903 620904 620905 620908 620912 620916 620926 620930 680310 680320 680904 680905 690113 690114 690310 690320 690330 690340 690350
228	190901 190902 190903 200900 210210 210310 790410 790420 790430 800700
246	2120 220111 220112 220121 220122 350110 450311 450411 500110 580110 580111 580112 580113 580114 580210 580310 580311 580312 580400 580901 580902 580903 580904 580905 580906 580907 680210 680220 700110
274	230111 230112 230113 230114 230115 230116 230119 230121 230122 230123 230141 230142 230150 230151 230152 230901 230902 270000 270101 270102 270103 270104 270105 340210 340211 340212 340310 340410 340420 340510 340520 340530 340620 340630 340901 340903 340904 340906 340907 340908 340911 340912 340914 340915 440110 440120 440130 440140 440150 440210 440900 650110 650210 650310 650900 670110 670210 670310 670410 670901 670902 670903 680110 680140 680901 680902 690116 790600 900002 990900